REMARKS

This is in response to the Office action mailed on September 21, 2005. This response is being filed together with a petition for extension of time for response.

Submitted herewith for entry into the record of the instant application and for the examiner's consideration in reference to the following remarks of applicant are the following technical documents:

(1) Definition of alumina trihydrate from Sax et al., "Hawley's Condensed Chemical Dictionary", Eleventh Edition, page 43 (referred to herein as the "Hawley's reference").

(2) 2003 Product Data Sheet for Almatis Hydral® series aluminum trihydroxides.

(3) General Boehmite Information from the Fabre Minerals website: www.fabreminerals.com. (referred to herein as the "Fabre website")

In response to the restriction requirement, applicants affirm the election of claim 1-5, with traverse. Accordingly, Claims 6 and 7 are cancelled.

Claim 3 has been revised to read more precisely and to overcome the objection raised by the examiner.

Claims 1-3 were rejected by the examiner for indefiniteness on the grounds that the phrase "pigmentary aluminum trihydrate, aluminum trihydrate slurries" is unclear. Accordingly, claim 1 has been amended to read more precisely.

Claims 1 and 4 have been further amended to more precisely define the subject matter of the disclosure.

Claims are also amended to correct an inadvertent error in the name of alumina trihydrate. The original claims recited "aluminum trihydrate". As shown in the Hawley's reference, there are a variety of names for this material including alumina trihydrate and aluminum trihydroxide. The product data sheet for Hydral®710 used in Examples 5-6 and J-K of Table 7 describes alumina trihydrate materials of the kind used. This amendment does not incorporate new matter as one of skill in the art would have appreciated the term "aluminum trihydrate" to be in error especially from the disclosure of Hydral®, well known as aluminum trihydroxide, which is also known as alumina trihydrate, as shown in the Hawley's reference. The specification is amended to clarify what is meant by aluminum trihydrate consistent with the Hawley's reference and the Hydral® product data sheet.

Claims 1 and 4 now recite the function of the alumina trihydrate (hereinafter "ATH") as a rheology modifier for reducing the viscosity of the slurry as compared to a slurry which is free of ATH, the amount of the ATH being from 0.1 up to about 1% and new claims 8 and 9 recite the slurry Brookfield viscosity of less than 1500 cps at 20 rpm. Support for the recited

features added to the claims by this amendment will be found in the specification of the instant application at page 5, lines 8-9 and 28, page 6, lines 34-35 and page 9, lines 11-14.

Claims were rejected under 35 U.S.C. 103(a) as obvious over Rohrbaugh et al. (U.S. Patent Application Publication No. 2002/0028288) (hereinafter the "Rohrbaugh at al. publication").

Rohrbaugh et al. was relied on for disclosing a coating and coating composition comprising a nanoparticle system including hectorite as well as various forms of alumina and titanium oxide. Rohrbaugh et al. was further relied on for teaching coatings comprising the nanoparticles and adjuncts and concentrated coating compositions. Reliance was placed on these disclosures to conclude that one skilled in the art would be motivated to employ the nanoparticles in percentage ranges comparable to the ranges recited in the instant claims.

Claim 1 now recites an aqueous pigmentary alumina trihydrate extender pigment slurry for blending with a titanium dioxide pigment slurry for making a high solids slurry comprising titanium dioxide capable of use in papermaking applications, comprising:

(a) alumina trihydrate pigmentary particles having an average particle size of at least 0.5 micron;

(b) a dispersant comprising an acrylic dispersing resin, and optionally citric acid;

(c) a rheology modifier consisting of a synthetic hectorite clay in an amount from 0.1 up to about 1% by weight of the total slurry formulation;

(d) optionally a compound to adjust pH;

(e) a biocide; and

(f) water, wherein at least 50% by weight of the slurry is dispersed alumina trihydrite and the synthetic hectorite clay of the slurry for reducing the viscosity of the slurry compared to the viscosity of the same slurry which is free of a synthetic hectorite clay. [Emphasis added].

The instant claims relate to alumina trihydrate pigmentary particles which have an average particle size of at least 0.5 micron (500 nm). In contrast, the Rohrbaugh et al. publication relates to a nanoparticle system. Rohrbaugh et al. define nanoparticles as particles having diameters of about 400 nm or less, see page 4 paragraph 0045. Moreover, one particular form of alumina described in Rohrbaugh et al., the boehmite alumina, is said to have a mean particle size of about 25 nanometers in length and about 2-4 nanometers in thickness, see page 6 paragraph 0065. Such alumina particles are substantially smaller than the pigmentary size range recited in the instant claims.

As stated in the disclosure of the specification at page 4, line 4 to page 5, line 8, the claimed pigmentary particle size of the alumina trihydrate is important for obtaining suitable

slurry viscosity properties. Particles that are of the smaller size range disclosed in Rohrbaugh et al. would not meet the objectives of the instant claims.

In the Office action boehmite alumina is said to be known in the art as alumina trihydrate. However, information from the Fabre Minerals website shows the mineral boehmite to have the chemical formula AlO(OH), a monohydroxide. In contrast, alumina trihydrate is defined by the chemical formulas $Al_2O_3{\cdot}3HOH$ or $Al(OH)_3$. As such, the teaching in Rohrbaugh et al. of boehmite fails to teach or suggest pigmentary alumina trihydrate. Should the examiner maintain the position that boehmite alumina is known in the art as alumina trihydrate, the examiner is respectfully requested to support this finding with a reference or if it is based on facts within the personal knowledge of the examiner, with an affidavit under 37 C.F.R. 1.104 (d)(2).

As stated in the disclosure of the specification, ATH slurries have been used as extender slurries in paper manufacturing but at the more desired high solids concentrations (greater than 50 % ATH pigment solids) the slurry viscosity is too high for either indirect use or use as a slurry to be blended with titanium dioxide slurries. See the instant specification at page 1, lines 23-35.

Surprisingly, it was found that incorporating a synthetic hectorite clay provides a superior ATH slurry in terms of viscosity and improves other properties including wet-in, that is, reducing time needed to incorporate solid pigment particles of ATH into an aqueous slurry, see the instant specification at page 4, lines 18-24.

It was discovered that unlike other clays commonly present in papermaking slurries comprising ATH, the synthetic hectorite provides the dual benefits of enhancing the rheology of the ATH slurries while reducing the viscosity during shear, see the instant specification at page 6, lines 30-34.

As further supported by the examples of the specification, synthetic hectorite clay formed a lower viscosity ATH slurry than comparable ATH slurries which did not contain synthetic hectorite but which contained bentonite clay (see Examples A, B,C,E,F and G) in various amounts or no clay at all (see Examples D, H, I, J and K). In particular, Table 2 shows that the slurry of Example 1 which contained synthetic hectorite had significantly lower Brookfield viscosity values at various rpms and Hercules viscosity as compared to comparative Examples A-D. Similar results are shown in Tables 4, 6 and 8. The slurries containing synthetic hectorite also took less time to bring the ATH into solution than the slurries which did not contain synthetic hectorite.

As stated in the disclosure of the specification at page 7, lines1-9:

"Surprisingly it has been found that when synthetic hectorite clay, is present in an aqueous ATH slurry, the viscosity of the slurry is dramatically reduced. This is surprising since synthetic hectorite is known to produce thickened liquids or gels, and, is commonly used to increase viscosity for water-based slurries and paints, The synthetic hectorite, in contrast, natural clays are ineffective at reducing the viscosity and providing rheological benefits in an ATH slurry. In fact, such clays increase viscosity as a function of the amount present."

Nothing in the Rohrbaugh et al. publication suggests that synthetic hectorite clay would improve the viscosity of a high solids pigmentary ATH slurry. The teaching of synthetic hectorite in a long laundry list of inorganic metal oxides including natural clays for use in a compositions which might contain boehmite alumina and which might be a concentrate would not have motivated the skilled person to choose the synthetic hectorite over natural clay for use in a high solids ATH slurry with the expectation that the resulting ATH slurry would have a lower viscosity. Obviousness cannot be predicated on the basis of "obviousness to try". It would not have been obvious to modify a concentrate composition of the kind disclosed in Rohrbaugh et al. by substituting the claimed alumina trihydrate particles having an average particle size of at least 0.5 micron for boehmite and then seek to reduce the viscosity of a high solids content slurry by selecting from a list of natural and synthetic clay materials synthetic hectorite for incorporation into the slurry.

In view of the foregoing, allowance of the above-referenced application is respectfully requested.

Respectfully submitted,

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